REMARKS

Claims 1, 6-9, 16, 19, and 20-25 are all the claims presently pending in the application. New claims 21-25 are added. Claims 10-15 stand withdrawn, as resultant from restriction, but are subject to evaluation for rejoinder upon ultimate determination of allowable subject matter.

Support for the claim amendments and new claims is found at lines 7-16 of page 6 and line 11 of page 7 through line 8 of page 8. No new matter is added.

It is noted that the claim amendments, if any, are made only for more particularly pointing out the invention, and <u>not</u> for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1, 6-9, 16, 19, 20 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over US Patent 6,642,539 to Ramesh et al.

This rejection based on Ramesh, as best can be deciphered, is again respectfully traversed in the following discussion.

I.   THE CLAIMED INVENTION

As described, for example, in independent claim 1, the claimed invention is directed to a storage medium including a metallic underlayer and a ferroelectric data layer over the metallic underlayer that <u>serves as a layer for storing information as polarized domains in the ferroelectric data layer</u>. A layer over the ferroelectric data layer has a charge migration rate faster than a charge migration rate of the ferroelectric data layer.

As explained at lines 11-17 of page 2 of the specification, no solution has yet been found to the surface depolarization problem that plagues the art of ferroelectric disk technology using vertical polarization of an FE surface, as explained in more detail beginning at line 22 on page 6, wherein is described a slow loss of surface polarization over several to 24 hours time scale. The inventors recognized that this effect was due not to loss of bulk polarization in the FE film but to accumulation of mobile surface charges which neutralize the bound charges constituting the surface polarization.

The claimed invention provides a solution to this recognition of surface polarization,

by providing a layer over the ferroelectric data layer that has a charge migration rate that is faster than the charge migration rate of the ferroelectric data layer and thereby protects against surface depolarization of the polarized domains.

II.   THE PRIOR ART REJECTION

The Examiner continues to allege that Ramesh renders obvious the present invention as defined by claims 1, 6-9, 16, 19, and 20. Applicants again respectfully disagree and again respectfully submit that the rejection of record <u>fails to establish a <i>prima facie</i> rejection</u> either for anticipation or for obviousness, at least, not <u>until the Examiner provides positive identification as to which layers in Ramesh are being relied upon to demonstrate the claimed invention.</u>

However, in an attempt to expedite prosecution, Applicants have amended the claims to clarify the memory storage technique in the claimed invention as clearly distinguished from the technology used in Ramesh. Such change is not intended as acquisence by Applicants that the rejection of record establishes a proper rejection that satisfies the plain meaning of even the original claim language, but is merely an attempt to expedite prosecution.

Therefore, relative to the amended claim language, Ramesh does <u>not</u> address technology for memory storage based on <u>polarized domains in a ferromagnetic data layer</u>.

That is, in contrast to Ramesh, as exemplarily shown in Figure 1 of the present application, the present invention stores bits of information as very localized portions of polarization of a ferroelectric data layer (e.g., FE DL, 101), using vertical polarization (e.g., an electric field normal to the disk surface) as the mechanism to write data. As explained in lines 19-20 of page 6, as of the filing date, the inventors had been able to achieve the capability to write patterns on the scale of 1000 Å, a density considerably greater than that possible using transistor-based memory cells such as used in Ramesh.

As explained at lines 20-21 of page 6, the problem being addressed by the present invention is that the inventors recognized there to be a slow surface depolarization of the polarization-written information. As explained at the top of page 7, the inventors were able to discover that this slow loss of surface polarization was not due to a loss of bulk polarization in the FE film, but, rather, was due to accumulation of mobile surface charges which neutralize the bound charge constituting the surface polarization.

The solution offered by the present invention is that of providing an overlying conducting layer (e.g., layer 211 shown in Figure 2), thereby shielding against this depolarization. In an exemplary embodiment, the conducting layer directly contacts the ferroelectric data layer.

Therefore, the type of ferroelectric memory of the present invention is <u>entirely</u> <u>different</u> from the ferroelectric memory cell used in Ramesh, even if there are some co-incidental similarities in some materials of some layers. That is, there is nothing in Ramesh that corresponds to the structure 210 shown in Figure 2 of the present application and as described in the independent claims, and the Examiner makes no attempt in the rejection of record to point out such corresponding structure in Ramesh. Absent such demonstration of corresponding structure, the rejection clearly fails to establish a *prima facie* rejection.

Hence, turning to the clear language of the claims, in Ramesh there is no teaching or suggestion of: "*A storage medium, comprising: a metallic underlayer; a ferroelectric data layer over said metallic underlayer, <u>said ferroelectric data layer serving as a layer for</u> <u>storing information as polarized domains in said ferroelectric data layer</u>; and a <u>layer over</u> <u>said ferroelectric data layer having a charge migration rate faster than a charge migration</u> <u>rate of said ferroelectric data layer</u>*", as required by independent claim 1. The remaining independent claims have similar language.

Therefore, Applicants again respectfully submit that there are features of the claimed invention that are not taught or suggested by Ramesh, and the Examiner is respectfully requested to reconsider and withdraw this rejection based on Ramesh.

III.   FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1, 6-9, 16, 19, and 20-25, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance, and that withdrawn claims 10-15 are also in condition to be rejoined and allowed, since they are also amended to reflect allowable subject matter. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a <u>telephonic or personal interview</u>.

Serial No. 10/697,271
Docket No. YOR920030500US1 (YOR.495)

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

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